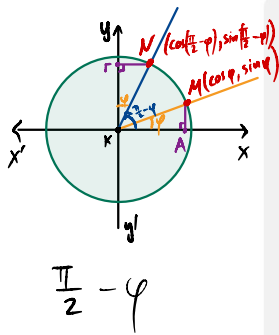


$\phi \acute{\epsilon}\rho\omega \ MA \perp x'x$   
 $\kappa\alpha\iota \ N\Gamma \perp y'y$   
 Συγκρίνω τα τρίγωνα  
 $\triangle K\hat{\Gamma}N, \triangle K\hat{A}M$



•  $|KM| = 1 = |KN|$  ①

•  $\angle K\hat{\Gamma}N = \varphi = \angle M\hat{A}K$  ②

•  $\angle N\hat{\Gamma}K = 90^\circ = \angle M\hat{A}K$

•  $\triangle K\hat{N}\Gamma = \triangle K\hat{A}M$  ③

Κριτήριο  $\Gamma\hat{\Gamma}\Gamma$  (ASA)

•  $\triangle K\hat{N}\Gamma = \triangle K\hat{A}M$

$\left\{ \begin{array}{l} |N\Gamma| = |MA| \text{ απέναντι της } \varphi \\ | \Gamma K | = |KA| \text{ προγεγυμένη της } \varphi \end{array} \right.$

$|N\Gamma| = \cos\left(\frac{\pi}{2} - \varphi\right) \quad | \Gamma K | = \sin\left(\frac{\pi}{2} - \varphi\right)$   
 $|MA| = \sin \varphi \quad |KA| = \cos \varphi$

$\cos\left(\frac{\pi}{2} - \varphi\right) = \sin \varphi$   
 $\sin\left(\frac{\pi}{2} - \varphi\right) = \cos \varphi$

$\tan\left(\frac{\pi}{2} - \varphi\right) = \frac{\sin\left(\frac{\pi}{2} - \varphi\right)}{\cos\left(\frac{\pi}{2} - \varphi\right)} = \frac{\cos \varphi}{\sin \varphi} = \cot \varphi$

$\tan\left(\frac{\pi}{2} - \varphi\right) = \cot \varphi$

$\cot\left(\frac{\pi}{2} - \varphi\right) = \dots = \tan \varphi$

$\sec\left(\frac{\pi}{2} - \varphi\right) = \frac{1}{\cos\left(\frac{\pi}{2} - \varphi\right)} = \frac{1}{\sin \varphi} = \csc \varphi$

$\sec\left(\frac{\pi}{2} - \varphi\right) = \csc \varphi$

$\csc\left(\frac{\pi}{2} - \varphi\right) = \frac{1}{\sin\left(\frac{\pi}{2} - \varphi\right)} = \frac{1}{\cos \varphi} = \sec \varphi$



φέρω  $MA \perp x'x$

φέρω  $NG \perp y'y$

Συγκρίνω τα τρίγωνα

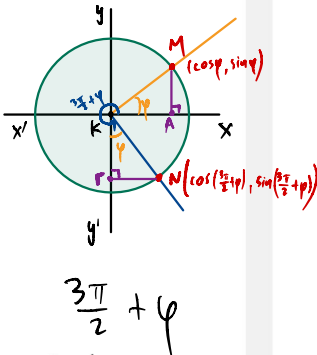
$\triangle MKA, \triangle NKG$

$$\angle NKG = \varphi = \angle MKA \quad ①$$

$$|MK| = 1 = |NK| \quad ②$$

$$\angle MAK = 90^\circ = \angle KGN$$

$$\text{άρα } \angle MA = \angle KN \quad ③$$



$$\cos\left(\frac{3\pi}{2} + \varphi\right) = \sin \varphi$$

$$-\sin\left(\frac{3\pi}{2} + \varphi\right) = \cos \varphi$$

$$\cos\left(\frac{3\pi}{2} + \varphi\right) = \sin \varphi$$

$$\sin\left(\frac{3\pi}{2} + \varphi\right) = -\cos \varphi$$

$$\text{Από } ①, ②, ③ \implies \triangle MKA = \triangle NKG$$

Κριτήριο ΓΠΓ (ASA)

$$\text{Αρα } \begin{cases} |GN| = |AM| & (\text{απέναντι της } \varphi) \\ |KG| = |KA| & (\text{προσκειμένη της } \varphi) \end{cases}$$

$$\tan\left(\frac{3\pi}{2} + \varphi\right) = \frac{\sin\left(\frac{3\pi}{2} + \varphi\right)}{\cos\left(\frac{3\pi}{2} + \varphi\right)} = \frac{-\cos \varphi}{\sin \varphi} = -\cot \varphi$$

$$\text{Αρα } \tan\left(\frac{3\pi}{2} + \varphi\right) = -\cot \varphi$$

$$\cot\left(\frac{3\pi}{2} + \varphi\right) = \dots = -\tan \varphi$$

$$\sec\left(\frac{3\pi}{2} + \varphi\right) = \frac{1}{\cos\left(\frac{3\pi}{2} + \varphi\right)} = \frac{1}{\sin \varphi} = \csc \varphi$$

$$\text{Αρα } \sec\left(\frac{3\pi}{2} + \varphi\right) = \csc \varphi$$

$$\csc\left(\frac{3\pi}{2} + \varphi\right) = -\sec \varphi$$

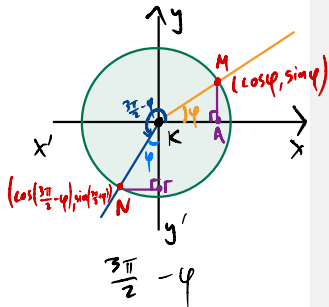


Φέρω  $MA \perp x'x$

και  $NG \perp y'y$

Συγκρίνω τα  
τριγωνα

$\triangle MAK, \triangle NGK$



- $\angle MAK = \varphi = \angle NGK$  ①
  - $|KM| = 1 = |KN|$  ②
  - $\angle KMA = \angle KNG$  ③
- $\left. \begin{matrix} \text{①} \\ \text{②} \\ \text{③} \end{matrix} \right\} \xRightarrow{(\pi \text{ r})} \triangle MAK = \triangle NGK$

$$\begin{cases} |NG| = |MA| \\ |KG| = |KA| \end{cases} \Rightarrow \begin{cases} -\cos\left(\frac{3\pi}{2} - \varphi\right) = \sin \varphi \\ -\sin\left(\frac{3\pi}{2} - \varphi\right) = \cos \varphi \end{cases}$$

$$\cos\left(\frac{3\pi}{2} - \varphi\right) = -\sin \varphi$$

$$\sin\left(\frac{3\pi}{2} - \varphi\right) = -\cos \varphi$$

$$\begin{aligned} \tan\left(\frac{3\pi}{2} - \varphi\right) &= \frac{\sin\left(\frac{3\pi}{2} - \varphi\right)}{\cos\left(\frac{3\pi}{2} - \varphi\right)} = \frac{-\cos \varphi}{-\sin \varphi} = \\ &= \frac{\cos \varphi}{\sin \varphi} = \cot \varphi \end{aligned}$$

$$\tan\left(\frac{3\pi}{2} - \varphi\right) = \cot \varphi$$

$$\cot\left(\frac{3\pi}{2} - \varphi\right) = \dots = \tan \varphi$$

$$\sec\left(\frac{3\pi}{2} - \varphi\right) = \frac{1}{\cos\left(\frac{3\pi}{2} - \varphi\right)} = \frac{1}{-\sin \varphi} = -\csc \varphi$$

$$\sec\left(\frac{3\pi}{2} - \varphi\right) = -\csc \varphi$$

$$\csc\left(\frac{3\pi}{2} - \varphi\right) = -\sec \varphi$$